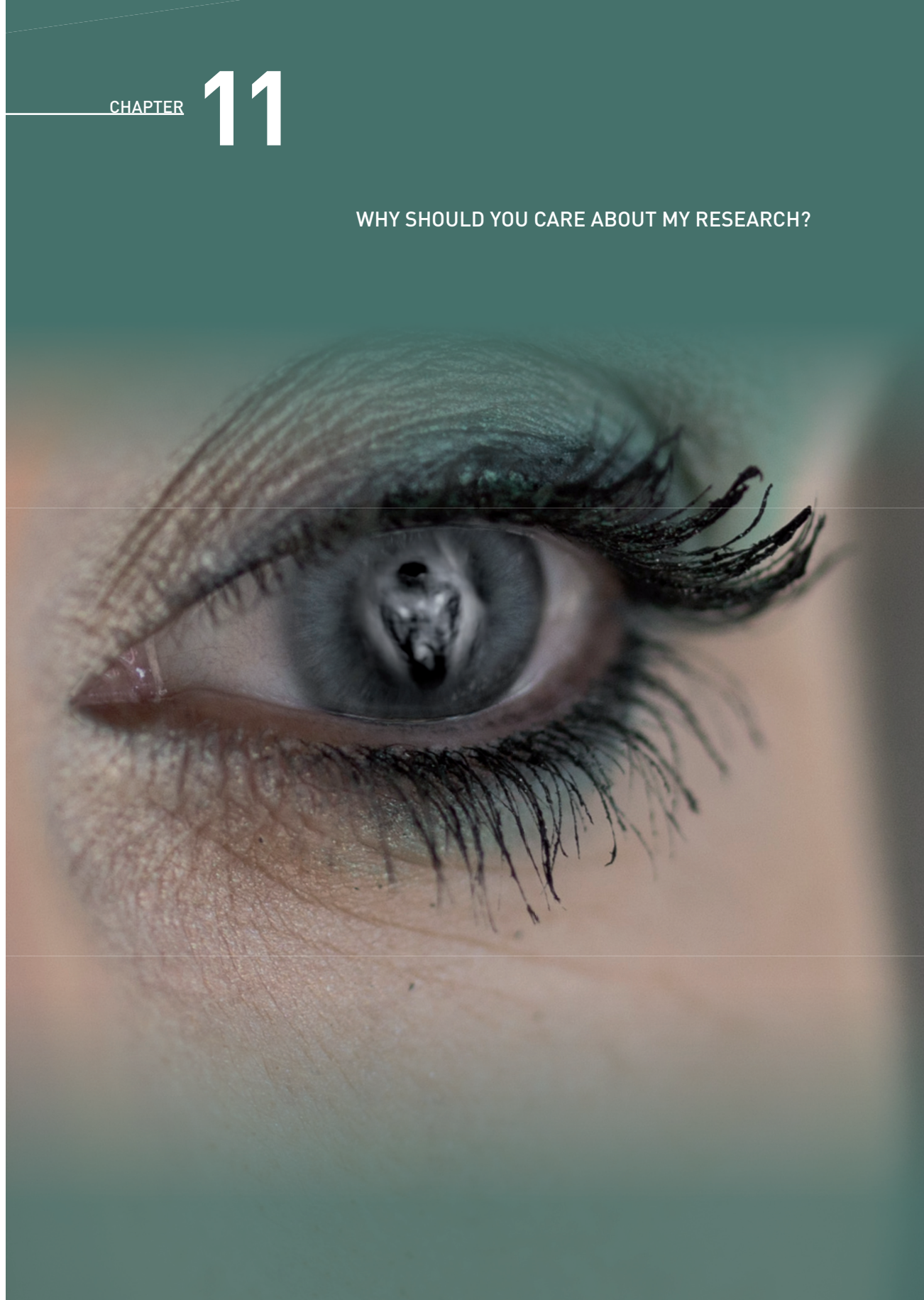
Translabial 3D ultrasound for diagnosing levator ani defects in women with pelvic organ prolapse

CHAPTER 11

WHY SHOULD YOU CARE ABOUT MY RESEARCH?



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Pelvic organ prolapse (POP) has a multifactorial aetiology. The symptoms of a weakened pelvic floor can range from mild to debilitating, and it can affect women's ability to lead an active life, and even maintain sexual intimacy. More than half of women above age 40 develop POP. The lifetime risk for POP surgery is about 11%. About 30-50 percent of women who underwent POP surgery are confronted with recurrent POP. POP does not only constitute a major health care problem, but can also cause emotional distress and a decrease in women's Quality of Life. One of the alleged important factors in developing POP and recurrent POP, is vaginal birth in which an important pelvic floor muscle called the levator ani muscle, is damaged. The levator ani muscle plays an important role in the support of the pelvic floor and in the maintenance of continence. Severe levator ani muscle damage has been stated to be the missing link between understanding the aetiology of POP and it's recurrence after surgery. Advancements in imaging allows assessment of the levator ani muscle with translabial 3D ultrasound and with MRI, of which the latter is currently the reference standard. Previous research from different research groups found an association between severe damage of the muscle and POP, and its recurrence. Based on these limited and mainly retrospective data, some hospitals worldwide already incorporated the translabial 3D ultrasound in daily practice despite the fact that until now no validation of this technique took place. Translabial 3D ultrasound has multiple benefits over MRI; it is cheaper, more easily accessible for gynaecologists and there are no contra-indications for using it. If in fact we are able to predict which women are prone for recurrent POP based on major levator ani defects, we can consider a different surgery technique to repair the prolapse. This other surgery technique is called mesh surgery which it is known for lower risks of recurrence but higher costs and complication risk compared to the first choice surgery with native tissue. In the Netherlands mesh surgery is mostly used when women develop a recurrent prolapse.

In the Trudil study we investigated if it is possible to assess levator ani muscle defects with translabial 3D ultrasound and if levator ani defects indeed can predict recurrence in women with an anterior vaginal wall prolapse one year after surgery (with native tissue). The results of this research showed that in fact it is possible to detect levator ani muscle defects with translabial 3D ultrasound in women with POP compared to MRI. Unfortunately we found that grading these defects (assessing the severity of such defect) is rather difficult and therefore extensive training of gynaecologists or ultrasonographers is needed before the technique could be actually implemented in daily practice. However, slightly unexpected, we did not found an association between levator ani defects and recurrent prolapse 12months after surgery with native tissue . Based on this findings we can state that using pelvic floor imaging for the assessment of the integrity of this levator ani muscle in predicting recurrent POP is a waste of

time, money and effort. In itself, this results seem disappointing because we hoped to confirm that levator ani muscle defects indeed are the missing link in the aetiology of POP. However it is also important to inform gynaecologists that the presence of levator ani muscle damage itself is not relevant for treatment decisions . In respect to valorisation we can thus state that our study results lead to less health costs and less burden on patients due to less unnecessary extended clinical examination. In addition to the above mentioned results we acknowledge that, when confirmed in another trial, this line of research is in our opinion ending.

In the same population we also investigated patients preferences of the current surgical treatment options. The first choice surgical treatment of anterior vaginal wall prolapse as mentioned above, is surgery with native tissue. This surgery technique is known for re-operation rates of up to 30% because of recurrence. The introduction of vaginal polypropylene implants (mesh surgery) has decreased the recurrence rate, but the complication rates are higher compared to native tissue surgery. For that reason, mesh surgery is mostly performed for recurrent POP. Specific complications of mesh surgery are related to the host response against the foreign body and are expressed by healing problems. So, although the use of vaginal mesh reduces the risk on recurrent prolapse, mesh-specific complications might negatively affect quality of life. In respect to successful surgery outcomes, doctors are really focussed on both a low risk of recurrence and low complication rates but unfortunately such a technique is not available yet. Thus far, patients' perspectives regarding type of POP surgery are under addressed. Patients preferences, either accept mesh specific complications in order to benefit from a lower risk of recurrence, or accept a higher risk of recurrence in order to avoid mesh-related complications, are not known yet. We investigated which properties (benefits/complications) are most important in making this choice. Our results showed that patients considered four properties as important (risk of recurrence, risk of infection, risk of painful intercourse and risk of exposure, the latter only possible in mesh surgery). Balancing the surgery-related benefits, i.e. a lower risk of recurrence against risks like infection, exposure and painful intercourse, native tissue surgery was preferred in 74% of the choices as a primary correction of anterior vaginal wall prolapse, followed by a preference for mesh in 26%. This means that the current status ensures that patients now choose for a surgery with higher risk of recurrence but lower complications. By incorporating "lower" hypothetical values of the mesh risks in our model, we found that if the meshes considerably improve in lower risk of infection and exposure, patients tend to favour mesh surgery over native tissue as a primary correction of prolapse. This model could also be expanded for obtaining patients surgery preferences for recurrent prolapse. It could well be, that in respect to recurrent surgery, patients accept different values of risks or benefits. These results are important for manufacturers of mesh implants.